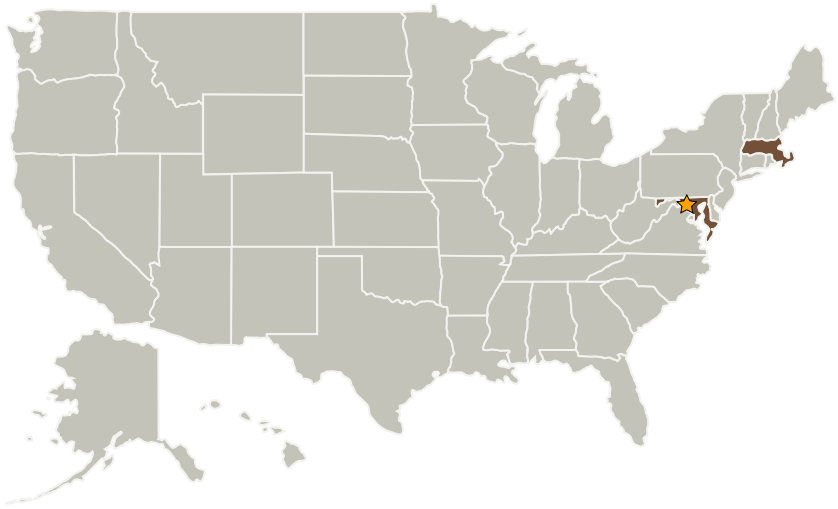
Micro Resistojet for Small Satellites, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

Micro-resistojets offer an excellent combination of simplicity, performance and wet system mass for small satellites (<100 kg, <50 watts) requiring mN level propulsion and low to moderate delta V (<500 m/sec). In Phase I, the potential of a unique micro-resistojet concept suited for low power level was established , and "green" methanol, cracked thermally (without a catalyst) was identified as the propellant of choice. An Isp of 250 seconds is expected. The overall objective of the Phase II Program is to develop an Engineering Model (EM) of the "green" methanol/water fueled micro-resistojet system. The system will be as near as possible to a flight system without having specific mission requirements and will utilize off the shelf power processing components and Lab View software to simulate flight system components in order to minimize cost. Target design specifications for the system are: Thrust - 5.4*10-3 newtons; Specific Impulse - 250 seconds; Mass flow - 2.2*10-3 grams/second (0.167 ccm liquid); Input Power - Less than 20 watts including losses; and Operating Life ? 1000 hours. The EM will be delivered to NASA at the conclusion of Phase II following a 100 hour sustained test at Busek.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Busek Company, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Natick, Massachusetts

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.4 Electrothermal